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THE UNIVERSITY OF THE STATE OF NEW YORK

BULLETIN TO THE SCHOOLS

March
1940

VOLUME 26
NUMBER 7

ARBOR DAY AND BIRD DAY

SOONER or later all who garden, plant trees — and where space permits, more and more trees as the years pass by.

When first we dabble in the healthful pastime of gardening, our interests may be in the lesser things. We may enthuse over tiny alpine plants, bulbs or tall herbs. Later, we are attracted to shrubs, more permanent things.

Finally we take to our heart trees, treasure them while life lasts and hand them on, objects of lasting usefulness and beauty, an enduring legacy to the generations that follow us.

Ernest H. Wilson, late director of the Arnold Arboretum of Harvard University.

THE UNIVERSITY OF THE STATE OF NEW YORK

BULLETIN TO THE SCHOOLS

Issued monthly during the school year by the State Education Department

CHARLES F. PROBES, *Editor*

This bulletin is sent without charge to all schools and educational institutions of the State. To others it will be mailed postpaid for 50 cents a year, 10 cents for single copies.

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March 1, 1940

For many years the Education Law of New York has required the Commissioner of Education to select an Arbor Day, for the purpose of teaching the school children of the State, our citizens of tomorrow, to appreciate the beauty and importance of trees. The idea of setting apart such a special day for observance by the schools is not only a matter of building sentiment but also of recognizing economic value and conserving natural resources.

> Many a tree is found in the wood
> And every tree for its use is good:
> Some for the strength of the gnarled root,
> Some for the sweetness of flower or fruit;
> Some for shelter against the storm,
> And some to keep the hearthstone warm.
> (Henry Van Dyke, *Salute to the Trees*)

In furtherance of this poetic thought and in accordance with legal authority, April 26th, May 3d and May 10th are herewith designated as Arbor Day for the year 1940, and with the local school authorities is placed the responsibility to determine which date will best serve each community and to conduct such programs as are agreeable and fitting.

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Commissioner of Education

ARBOR DAY SUGGESTIONS

ELLEN EDDY SHAW, BROOKLYN BOTANIC GARDEN

To make Arbor Day interesting to children it will be necessary to have them realize that trees can and do mean something to them. They will politely accept statements as to the value of forests in modifying climate and preventing soil erosion, and go away either unimpressed or slightly bored. By a little forethought a simple exhibit can be prepared that will interest them in trees and their planting. It may be planned along lines such as the following:

1 Trees for beauty

Force branches of apple, pear, cherry, quince or forsythia into bloom. Display two good pictures, one of an unplanted yard, street or apartment ground, and a second of a planted yard, street or apartment ground.

2 Trees for food

Oranges, apples, lemons, grapefruit, pears, dates, nuts of various kinds

3 Industrial products from trees

a A young spruce tree in a tub or a spruce branch. Paper napkins, paper plates, cups, string, crepe paper, spruce gum (the original chewing gum), a sausage in its case

b Poplar wood

Sample of wood pulp, newspaper, wrapping paper, papier-mâché articles

c Hemlock branch

Bark used for tanning; sample of untanned leather and one of tanned leather, gloves, shoes

d Red cedar tree or branch

Cedar chest, pencils

e Pine branch or young tree

Rosin and violin bow, turpentine and samples of paint, flypaper and sealing wax

f Various kinds of wood

Miniature furniture, boxes, wooden spoon, baseball bat etc.

4 Lumber

One good forest picture. Several small boards.

5 Seedling trees children may grow, as orange, lemon, grapefruit, oak, horse chestnut etc.

After the children have viewed the exhibit, show slides of the trees used, and finish, if possible, with a demonstration or motion picture of the correct way to plant a tree.

—o—

ACKNOWLEDGMENT

This Arbor Day and Bird Day number of the Bulletin to the Schools was compiled with the cooperation of the New York State Museum. The editor desires to express his appreciation to Dr Charles C. Adams, Director of the State Museum; to Dr Homer D. House, State Botanist; to Dr Dayton Stoner, State Zoologist; and to others who contributed articles and photographs.

It is hoped that this number of the Bulletin will stimulate a friendly and appreciative interest in trees, birds and the outdoor world. It is hoped, too, that teachers will find these articles suggestive of other means of instilling in pupils recognition of the fundamental truth that the happiness of individuals and the happiness and ideals of our Nation are interwoven with the beauty of our land and the abundance of our wild life.

FRANKLIN B. HOUGH, PIONEER IN FORESTRY

RALPH S. HOSMER, PROFESSOR OF FORESTRY, CORNELL UNIVERSITY

Forestry in New York State and in the Nation had its real beginnings in the decade from 1875 to 1885. Then were laid the initial foundations on which has been built the superstructure that we know today.

To lay foundations that will endure requires men of vision who also have the zeal and the ability to make their dreams come true. The State of New York has produced many leaders in forestry. Of those of the early days none is more outstanding than Dr Franklin B. Hough, a native of this State and long a resident of Lowville in Lewis county. It is fitting that his achievements be recalled and that he be gratefully remembered. Arbor Day, when properly observed, is an appropriate occasion for such a tribute, the more so in this case since Doctor Hough was himself active in the inauguration of this festival.

Franklin B. Hough

Franklin B. Hough's contributions to the beginnings of forestry in the United States were twofold. He was one of those who labored effectively for the New York State Forest Preserve and the state forest policy which supports it. For the Nation he was the first man officially to be appointed by the Federal Government specifically to study the forests of our country and to make recommendations for their proper care. In both tasks he rendered notable service. It is the purpose of this article to enumerate some of the salient features of what he accomplished.

While forestry has a background of centuries in Europe, the need for the systematic management of forests in America came only slowly to be realized. It was a virgin continent, unequalled by any other land in its natural resources, which welcomed the early colonists. As these sturdy and adventurous people and their immediate descendants pushed out farther and farther into the wilderness, they found an apparently unlimited supply of forests, of wild life and of minerals. It is not surprising that among them developed the "Legend of Inexhaustibility," which, coupled with the attitude characteristic of any frontier, led to consequences of improvidence and waste, from which it is only in recent years that we as a people are beginning to escape.

There were some, however, who realized that spendthrift ravaging of the bounties of Nature could not go on forever. Even in Colonial days occasional voices were raised in warning, although their pleas were usually dis-

counted or quickly forgotten. Later such protests became more frequent, as when, a little over a century ago, Governor DeWitt Clinton and James Fenimore Cooper voiced their feelings as to the dangers of forest destruction in New York State.

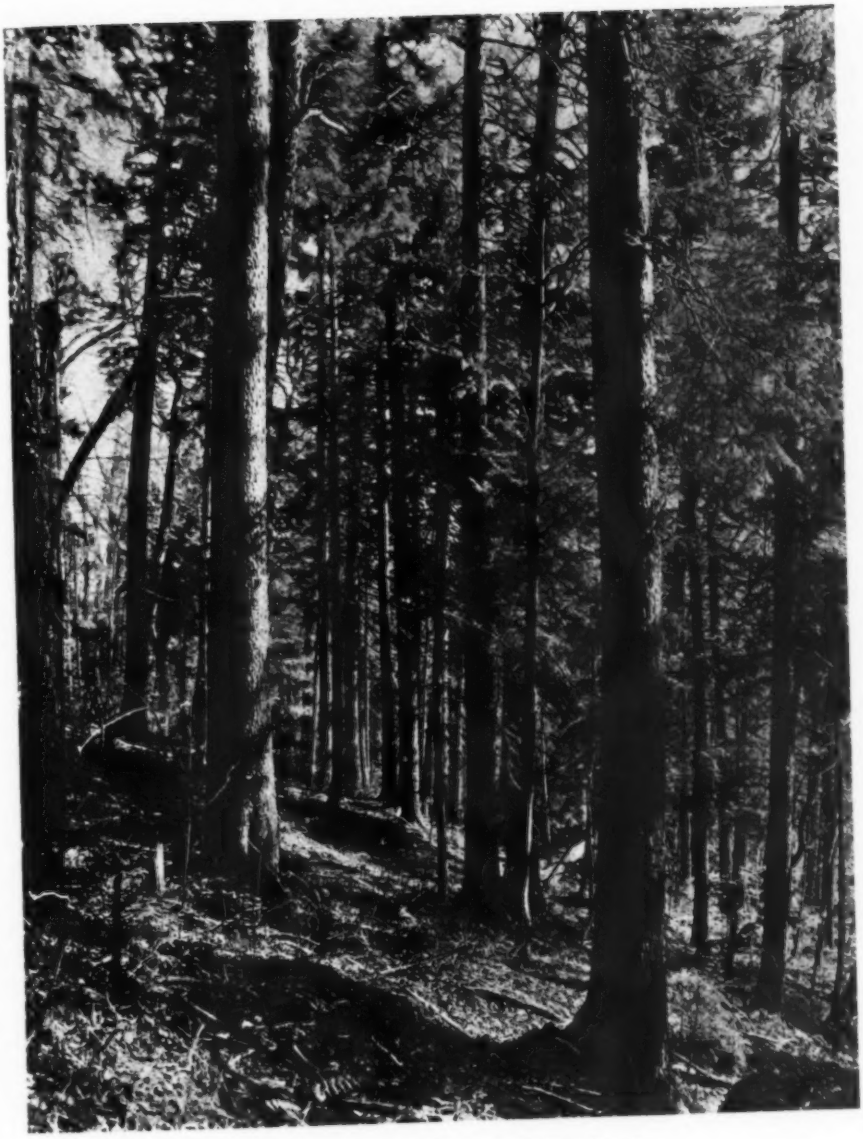
In the two decades following the Civil War some attention at last gradually began to be paid to the arguments of those who spoke for the forest. In this group belongs Doctor Hough, along with George B. Emerson, of Massachusetts; Professors W. H. Brewer and G. P. Marsh, both of Yale University; and, in the eighties, Dr Charles Sprague Sargent, director of the great Arnold Arboretum of Harvard University. It was an organized drive by the national body of the scientific men of the country, the American Association for the Advancement of Science, that finally led in 1876 to the beginning of national forestry by the appointment of Doctor Hough as special agent under the then Federal Commissioner of Agriculture. From this humble start has developed the United States Forest Service of today.

Dr Franklin B. Hough was born in Martinsburg, Lewis county, N. Y., on July 20, 1822. He was the second son of a physician, Dr Horatio Gates Hough, the first of his profession to settle in Lewis county, and Martha (Pitcher) Hough. Dr F. B. Hough was in the sixth generation of descent from an English emigrant who settled in Connecticut.

As a boy, young Hough became deeply interested in botany and in geology, particularly mineralogy, and through wide-ranging excursions of his own planning came to know Lewis county intimately as well as the surrounding region. Preparing at Lowville Academy and the Black River Institute at Watertown, he entered Union College, where he was graduated with the degree of A.B. in 1843. During his course he was elected to Phi Beta Kappa. Then after teaching for a time in New York and in Ohio, he took the regular course at the Cleveland Medical College, receiving the degree of M.D. in 1848. Much later, about 1880, the Regents of the State of New York conferred on him the honorary degree of Ph.D.

Before taking up his residence in Lowville Doctor Hough practised his profession in Somerville, St Lawrence county, from 1848 to 1852. He also served as surgeon of the 97th Regiment, New York Volunteers, in 1862 and 1863. While he always retained his interest in medicine it became with him from that time essentially an avocation, since his other interests led him more and more into the fields of local history, statistics and finally forestry.

As Doctor Hough studied the botany and geology of northern New York, incidentally becoming well acquainted with the Adirondacks, he became impressed with the importance of recording the local history. This led him to prepare and publish from 1853 to 1860 histories of St Lawrence, Franklin, Jefferson and Lewis counties which for accuracy and comprehensiveness rank as noteworthy contributions in that field. A compilation of meteorological data and the New York Civil List, both published by the State in 1855, led to the selection of Doctor Hough as director of the New York State Census for 1855, a post which he held again in 1865. A Gazetteer of New York State and several important monographs on the State Constitution and related subjects also belong in this period. As one of his biographers says, Doctor



Virgin Forest of Spruce on State Land

Hough was "preeminently a New Yorker." He was an indefatigable worker, with the ability to bring order and sequence out of a mass of details. He never spared himself in his search for all the information that was to be found, whatever the subject he undertook to investigate. He made statistics alive and vital.

Perhaps Doctor Hough's most notable service to forestry in New York State was in connection with his membership on two state commissions that had to do with the creation of the New York State Forest Preserve, one in 1872, the other in 1885. In the seventies the Adirondack region was just becoming known to the general public for it was still a wilderness. But large areas of the state-owned lands had been sold to railroad and other corporations at the ridiculously low figure of five cents an acre. Trespass on state land was the order of the day; indiscriminate logging the only known practice. How to handle the problem so presented led to acrimonious controversy.

In 1872 a commission of seven members was set up with Horatio Seymour as chairman. Verplanck Colvin, who from his surveys of the region perhaps knew the Adirondacks best of anyone, and Doctor Hough were members. To the latter was assigned the task of preparing the exhaustive report submitted by the commission in 1873. Most unfortunately this report was pigeonholed by the Legislature but it was not forgotten and ten years later helped to bring about the definite action that was taken in 1885.

In view of subsequent developments, after Doctor Hough's death, especially the inclusion in the State Constitution of the famous article VII, section 7 (now since 1938, article XIV, section 1), it is well to remember that Doctor Hough stood for a plan that recognized the place of the lumberman in forest management and that provided for what in more recent years has been called "perpetuation of the forest through wise use." In this attitude he was opposed by Mr Colvin, who held that a great state park was the right solution.

When this problem came to a head again in 1884, Doctor Hough was brought in to work with a special committee appointed by the Comptroller at the request of the Legislature, of which Professor Charles Sprague Sargent, of Harvard University, was chairman. This committee framed the bill authorizing the Forest Preserve and setting up the administrative machinery to handle it under the New York State Forest Commission, the first predecessor of the present State Conservation Department. This bill became law on May 15, 1885. It is "the foundational law of conservation in the State," for the basic state forest policy then adopted has been in operation ever since. This gives to New York the proud distinction of being the only state that can show so long a continuous record.

It was while working on the draft of the law of 1885 that Doctor Hough was stricken by his final illness, but many of his ideas are embodied in the act as passed. In all his efforts for forestry in New York, Doctor Hough exhibited the qualities of full knowledge based on intensive study, fairness to all concerned and vision for the future. These traits won the respect and admiration of all who knew him.

The second significant contribution made by Doctor Hough to forestry was the service, centering in Washington, which he gave when he laid the foundations of the Division of Forestry under

(Continued on page 262)

NEW YORK STATE PARKS

LITHGOW OSBORNE, NEW YORK STATE CONSERVATION COMMISSIONER

New York's vast network of state parks had its inception more than 50 years ago when the State of New York took over the Niagara Falls Reservation. The year 1885 also marked the beginning of the Adirondack and Catskill Forest Preserves.

For many years after the acquisition of the Niagara Reservation, it was the State's only park. Development of the Forest Preserve, however, was more rapid and assumed substantially its present form soon after its establishment. The history of state park and state forest preserves forms a highly important part of our State's policy in furnishing adequate recreational facilities for its 13,000,000 inhabitants.

About 1900 this State acquired some 40 other places of natural beauty or of historic interest. Control of these parks and reservations and historic sites remained vested in local commissions. There was little central control or unity in policy, and administration was lacking.

In 1926, as a part of the reorganization of the State Government, there was established a Division of State Parks, which was placed in the Conservation Department. New York State, outside of the Forest Preserve, was divided into 11 regions, each with a regional park commissioner appointed by the Governor and serving without monetary reward. There was also set up a State Council of Parks, being made up of the chairmen

New York State Conservation Department

Swimming Pool at Robert H. Treman State Park

of ten of the regional commissions, the Director of the Division of Lands and Forests, and the Director of the State Museum. The council, although lacking ultimate authority, has been successful in establishing uniform methods and practices now in use throughout the State. Much of the credit for the high development of the Empire State's vast network of parks belongs to the late Henry F. Lutz, former director of the Division of State Parks, and to Robert Moses, president of the Long Island Park Commission, and chairman of the State Council of Parks for the past ten years.

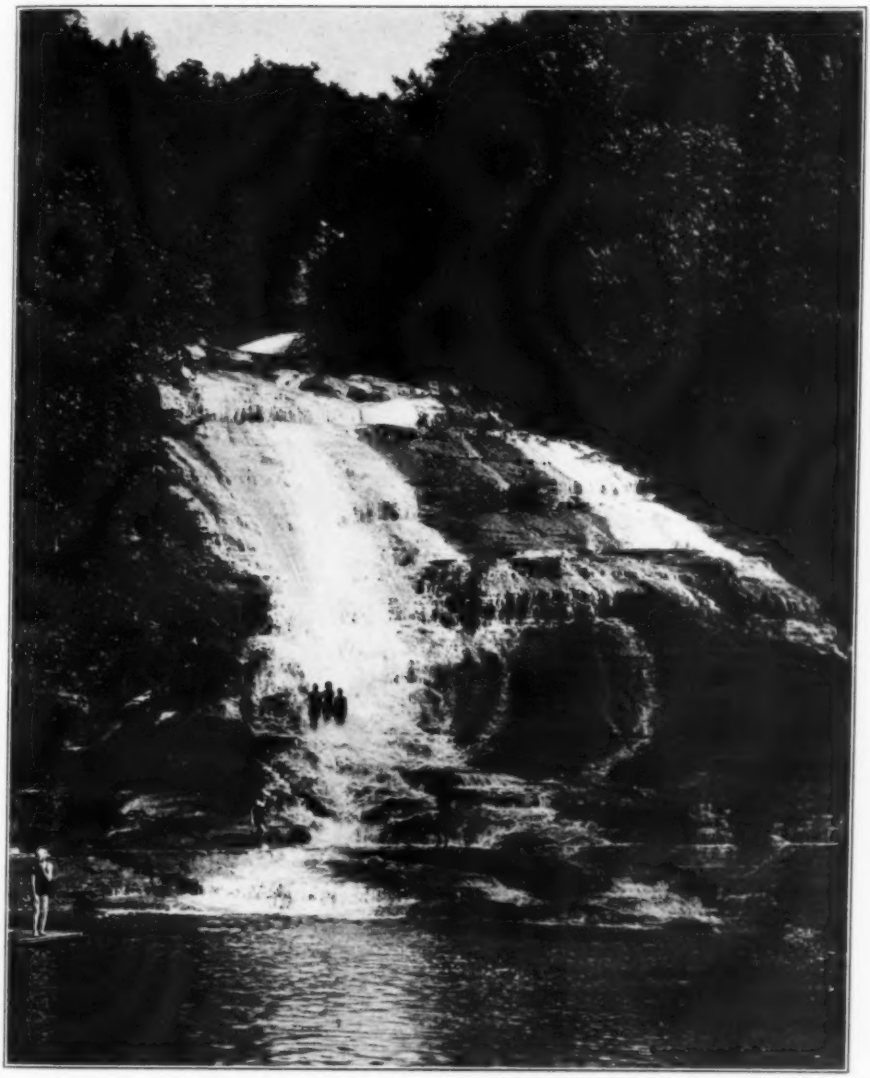
Few states in the Union can boast of such an elaborate system of parks as is found in New York. From Allegany, the vast wilderness park of 65,000 acres in the far western part of the State, to the most easterly park at Montauk Point on Long Island, and from the northern to the southern border, each of the 70 parks has its special attractions, recreational facilities and scenic beauties. Access to the various parks from the larger centers of population as well as from the more remote areas of the State is afforded over an excellent and modern system of highways. Also included in the park system are some 130 miles of parkways used last year by more than 41,000,000 cars.

The character of the parks varies widely. Jones Beach State Park on Long Island is a highly developed recreational center rather than one devoted to the preservation of scenic beauty. On the other hand, at Niagara Falls the primary purpose is the preservation of a great natural wonder. Between these two extremes, are such parks as Watkins Glen and Letchworth where both recreational facilities and preservation of natural scenic beauty are considered. In practically all the parks, picnic facilities such as tables and fireplaces are provided. Many offer cabin and camping facilities at reasonable rates. At nearly all there are bathing facilities and bathhouses. In several, provision is made for group camping as well as accommodations for trailers. During the year 1939 more than 25,000,000 people visited the state parks, exclusive of the Adirondack and Catskill parks.

Recreation facilities within the Forest Preserve have not reached the high degree of development of those found in the state parks because of restrictions and limitations placed on lands in the Forest Preserve. Camping is permitted, however, and, in order to minimize the fire danger, is concentrated by the establishment of free public camp sites where fireplaces and tent sites, a water supply and simple sanitary facilities are available. More than 740,000 persons were registered at the 32 camp sites last summer.

In addition, the Conservation Department maintains a system of 575 miles of hiking trails used by thousands of outdoor enthusiasts during the spring, summer and fall months. The development of skiing facilities in the Forest Preserve has necessarily proceeded at a slow rate. Some miles of ski trails are now in use. Scattered throughout the preserve are some 152 open camps or lean-tos where hikers and campers can find a night's shelter.

The necessity of providing facilities for the wise and beneficial use of leisure time by its millions of citizens has a definite place in New York State's governmental policy. A properly managed and definite park system and recreational program is a sound public investment which will pay incalculable dividends in the public health of future generations.



Buttermilk Falls and Pool, Near Ithaca

THE MOST VALUABLE TREES

DR H. P. BROWN, NEW YORK STATE COLLEGE OF FORESTRY

Photographs from Picture Collection of Bureau of Radio and Visual Aids

What are the most valuable trees? Apparently there are many answers. The value of a tree changes with the times and the purpose it serves. Some are valuable not so much for the wood they produce as for their fruit, such as the date palm, the coconut palm, the almond, apple, fig, olive and lemon trees; some for their bark, like the cork, oak and cinchona trees; some for their sap, like the maple, rubber tree and turpentine pines.

The coconut palm is the source of copra, used in the preparation of soap and of nut butter, the latter a substitute for butter, comparable to oleomargarine; the fibers from the husk of the coconut, known as coir, are valuable and are used for door mats, cordage etc. Olive oil comes from the well-known fruit of the olive tree, and its fine grained wood is turned into souvenirs. Mulberry is most valuable for its foliage which is the favorite food of the silkworm. The cinchona tree is probably one of the most valuable, since from its bark, known as Peruvian bark, is obtained quinine, the antidote for malaria, which is one of the worst scourges of the tropics.

Date Palm, Arizona

Coconut Palm, Florida

When we come to the northeastern United States and consider the forest trees, the question again is one of considerable uncertainty. Today one of the most valuable uses of forest trees is in forest recreation. The attraction of

northern New England as a vacation land is due as much to its white pine, spruce, balsam and white birch as any other natural feature. In the Adirondacks the evergreen forests make that region attractive. It would be difficult to imagine this section of New York State drawing the millions of people it does into its highways, camps and trails without its evergreen forests, largely composed of red spruce and balsam.

In Colonial days the sugar maple was a very important tree, not only for its valuable wood, but also as a source of sugar. Maple sugar was used for cooking and wherever sweetening was needed, but today its principal use is in tobacco. The maple syrup produced today is worth nearly $4,000,000 annually.

The white pine has always been an outstanding tree for lumber; even today quantities are used for box and house construction. The white elm is probably the best shade tree of the Northeast. Black walnut and ash are very valuable trees. Every tree, every shrub and every flower in the forest serves an important purpose, and it is difficult to single out any one member of the great community which we call a forest and say that one is the most important.

Rubber Tree, Peru

Sugar Maple Tree with Sap Buckets, New York

NATURAL HISTORY SCHOOL

The Allegany School of Natural History will offer its courses for the fourteenth season from July 1st to August 10th. The Buffalo Society of Natural Sciences conducts this field biology summer school in Allegany State Park in cooperation with the University of Buffalo and the Allegany State Park Commission.

A COMMUNITY BIRD SANCTUARY

WALTER ELWOOD, SUPERVISOR OF NATURE EDUCATION, AMSTERDAM

Photographs by the Author

The ravine in Amsterdam that for generations was called Sassafras Hollow nine years ago became the Sassafras Bird Sanctuary. The trees from which it derived its name so narrowly escaped being just a tradition, however, that the few small samples remaining are pointed to with pride and zealously cherished.

For the purposes of such a songbird sanctuary, one of its most desirable features is its accessibility, for it is located in the northwestern corner of the city where it can be reached easily on foot or by bus.

The heart of this 75-acre refuge is the beautiful winding ravine that marks the course of Dove creek. A mixed woodland of conifers and hardwoods spreads over its slopes; an old upland meadow, well furnished with wild strawberries and brambles, an ancient abandoned sandpit and some brush-dotted hillsides, all add to its charms.

Birds, too, as well as humans, like this area. In it some 50 species of birds regularly make their nests despite the city's ever-pressing nearness. While decidedly a veery settlement, the sanctuary has many other interesting residents, among which might be mentioned a few such favorites as tree swallows, rough-winged swallows, crested flycatchers and scarlet tanagers. At different times black-throated blue warblers and Blackburnian warblers have raised their broods within its shelter. Every year Canada and Nashville warblers are among its old inhabitants and the Louisiana water thrush conceals his home under the overhanging edges of Dove creek. Two seasons ago red-shouldered hawks, to our great satisfaction, raised a family of prospective mousers.

School Boys Trimming Christmas Trees for Birds and Squirrels in Sassafras Bird Sanctuary

Each year sees a few pink lady's-slippers still lifting up their beleaguered heads; a few minute patches of trailing arbutus hang on; and fairly satisfying stands of big white trilliums still gleam forth in many places under the trees. Our sanctuary, as we see it, is more than a refuge for birds; it is a refuge as well for plants and for the many forms of small animal life that find such a habitat to their liking.

The Sassafras Bird Sanctuary, as a community project, has had a checkered career. A man prowling about with a pair of binoculars at unseemly hours of the morning caused such mystification that he was asked to talk about birds before the garden department of the local women's club. He concluded his talk with a plea that Sassafras Hollow be

preserved as a sanctuary. A few weeks later, conducting this group through the ravine on their first bird walk, he saw them fall, as he had already fallen, under the spell of its wildwood charm and peace. Then and there the sanctuary idea enlisted its first workers. The following winter the man helped the cause along by giving a series of illustrated talks on the birds of the Mohawk valley. At the end of these ten meetings, the sanctuary was established, with the Century Club, the leading women's club of the city, as sponsor — an outcome made possible only by the wholehearted cooperation of the public-spirited owners of the hollow. The area was posted as a private park; the proper legal notices appeared in the local paper; signs made by public school pupils were placed in strategic points and a warden was engaged. That was the beginning.

Two years later so much interest had grown among those not members of the sponsoring organization that the Sassafras Bird Club was founded, for both men and women, and took over the project. It proceeded to erect the best modern types of nest boxes and feeding stations and, among many other undertakings, to set up nature trail plant-markers, to construct rustic footbridges and to make a typical small Iroquois Indian garden.

In 1935, when the city of Amsterdam acquired this territory and a large adjoining area of open farmland for a municipal golf course, the sanctuary suffered considerable dislocation and shock. New trails had to be laid, old trails rerouted and all the pains of moving day endured. Yet today the sanctuary is still right there, its 75 acres now protected better

Rehearsal of Nature Play on the Woodland Stage of the Sassafras Bird Sanctuary

than ever before by a shelter belt of 125 acres of golf course. The golf course which many birds apparently prefer to ordinary farmland is thus doubly an asset.

Since then, the city's cooperation and its ability to enlist W. P. A. and N. Y. A. assistance have enabled the Bird Club to go forward, little by little, with its 12-point program. An inclosing fence, guiding signs, handrails and stone steps for steep stretches of trail, stout bridges, a small picnic corner, log benches, dams to provide summer water areas are among the improvements already made. A trail-side museum is almost completed. A natural site for an outdoor stage and turf-upholstered seating terraces will be completed in the early summer.

The greatest value of a songbird sanctuary such as this is the example of conservation it sets, impressing upon many guests, young and old, that natural beauty is worth taking care of; that wild birds and animals, wild flowers and trees are a heritage worth safeguarding; that, after all, somebody cares.

(Concluded on page 261)

WHEN BIRD DAY WAS A "NECESSITY"

EDMUND J. SAWYER

There was no Bird Day in my grade school days some 50 years ago. That is, there was none heard of or dreamed of up-state until I made one, as the case required. You see, the love of Nature was still a remote something which a few celebrated persons like Bryant and Emerson had written about. It came closest to our schoolrooms in one or two songs about "the lovely, lovely woods of May,"—which we had to sing or else feel the weight of a heavy hickory ruler.

But every spring there would come a time when, between blue skies, nesting birds and woods white with hepaticas and trilliums, I just could not endure that stark, scowling, forbidding schoolroom. No use mincing words; I would and did run away. I took the inevitable thrashing when I returned to school the following day. Finally I thought of a way to escape that deadly ruler. There came such a day, as I have referred to, and away I went to the irresistible woods and fields. I remember, like yesterday, finding on that particular day my first meadow lark nest with its six marvelous eggs. I have sketched it roughly, as I vividly remember it. The three-mile walk back home that afternoon was in a rose-tinted trance and, as I dimly recall, a torrential, cold rain that soon drenched me to the skin. The next morning I brought to the teacher a note which read, in my best imitation of Aunt Mary's cramped old hand and style, "Dear miss - - - - : Please excuse Eddie for his absence for it was necessary." (*signed*) "M. M. Sawyer."

It worked too well. I was a Sunday School boy and God alone knows how agonizingly and long I tortured my soul with self-condemnation. Now it can be told. But neither that teacher nor poor Aunt Mary ever knew where that note originated or to what "necessity" it referred. But I did live to see them both "point with pride" to the naturalist who was once their truant problem.

What is far more, be assured, I have lived to see the day when a boy may confess his love for Nature, and even indulge it in reason, without fear of a hardwood ruler — a day when a boy need not resort to forgery in order to be true to the best that is in him.

WHAT BIRDS HEAR

PAUL KELLOGG, DEPARTMENT OF ZOOLOGY, CORNELL UNIVERSITY

With the first mild days of spring white-breasted nuthatches and chickadees begin their songs. Starlings are heard from the roof tops with a great variety of notes, often imitating, with considerable success, birds that will not arrive in our latitudes for many weeks. By April bird song is heard almost everywhere, and for ornithologists interested in securing recordings of bird songs it is a season of early morning rising.

Just about three years ago, with birds singing all about us, Albert Brand, another member of the ornithology staff at Cornell University, got the idea that it would be most interesting to find out if birds were able to hear all of the sounds that seemed so pleasing to us. Certainly one would expect birds to be able to hear each other, but could it be that they did not hear us as we talked with each other about such a possibility?

An experiment to determine just what birds hear seemed promising and, with his usual enthusiasm, Mr Brand started work on it. His first problem was to secure birds on which to work, and this he did with the help of his many friends. European starlings were our first subjects because they were easy to secure and easy to keep in captivity.

A small cage was built on the roof of our laboratory. At one end of the cage we prepared a small house in which we could sit and observe the birds without their seeing us.

The birds were fed on a special feeding shelf at one end of the cage nearest to the observer. The feeding shelf had electric wires all about the edge, where the birds had to sit while feeding. A push button in the compartment with the observers enabled us to send a current through the wires of the perch, shocking unpleasantly, but not harmfully, any bird sitting there.

Above the feeding shelf, close to the top of the cage, we supported a loud speaker similar to the speakers used in modern radio sets. By touching other buttons in our observers' compartment we could cause any pure tone we chose, from the lowest hum to the highest squeak, to be emitted from the loud speaker.

The next job was to train our birds to recognize that any sound from the loud speaker was a warning to leave the perch of the feeding shelf. If the birds did not leave when the warning siren sounded, we could give them a slight shock by sending an electric current through the wires on which they were standing.

At first we used a note from the loud speaker which we were sure the birds could hear, but we varied it slightly so that they would not become accustomed to any one note.

The birds were fairly quick to learn, and within a week they had learned to leave the food the instant the loud speaker commenced its warning; and we no longer had to shock them.

This response of the birds to sound gave us the means of telling whether or not the birds could hear the sounds because, after they had learned that a sound from the loud speaker meant danger, no bird would stay on the feeding shelf if the sound were audible. If the birds did not respond to the sound it was an indication that the sound was not heard.

We were now able to vary the note, trying higher and higher notes until we

were using sounds a full octave above the highest note on the piano keyboard. Still the birds seemed to have very acute hearing and would leave their food without any hesitation. As the sound became higher, however, they seemed to have difficulty in hearing it. Repeated tests seemed to indicate that they could not hear sounds above about 15,000 vibrations a second. This was interesting to us because it is also close to the upper limit of hearing for human beings.

Next we tried reducing the pitch of the sounds we were using, and here we were much surprised to find that starlings apparently could hear nothing below about 700 vibrations a second. This note is relatively high, being more than an octave above middle "C" on the piano.

This discovery was most interesting because it meant that most of man's conversation and perhaps much of his singing are entirely inaudible to starlings.

Naturally we were interested to know what other birds could hear, and so the experiment was repeated with English sparrows, domestic pigeons and canaries. The results of these experiments were similar to those of our first experiment in that all the species tested had a much more restricted range of hearing than man. The pigeon could hear about three notes, on the piano, below middle "C" but could not hear more than an octave above the highest note on the piano. The sparrows and the canaries tested were intermediate in their ability to hear high and low sounds.

We feel that there is much more interesting work to be done in this field, and some of this may be done by amateur bird students. For example, it is a common practice among falconers to train hawks to respond to a whistle and come to the lure. By the use of whistles of known varying pitches, the birds' ability to hear various sounds may be determined. Owls may be trained to come for their food in the same manner, and it is quite possible that similar methods may be adapted to other more common species, such as robins and chickadees.

A GAME PROTECTOR'S VIEWPOINT

G. R. LA PLANTE, STATE GAME PROTECTOR, PLATTSBURG

A few months ago while walking along what was once an old logging road, I came upon a man who was chopping down some cedar trees for fence posts. I stopped to pass the time of day with him and while we were talking, a short distance away in the top of a tree a robin in characteristic pose was singing gayly. My casual remark, "There is one happy bird," prompted him to look up and after a few seconds of contemplation reply, "Yes, that bird is the most useful and the most abused of all our wild life."

Knowing that this man was a farmer I was anxious to obtain his notion concerning the abuse of our songbirds. What impressed me most in our talk was the fact that he placed most of the blame for this abuse squarely upon the shoulders of the farmer. He maintained that too many modern farmers, in their desire for clean cultivation, have cut down all the brush along their fences and streams and cleaned out all the thickets and undergrowths in their pastures and woodlots. As I continued down the road I pondered

on what the farmer had said and concluded that at least he recognized the economic value of many of our birds.

When the farmer realizes that insects consume three billion dollars worth of farm products yearly in the United States and that he pays out for spray materials alone two hundred million dollars each year to combat destructive species, it would seem altogether unlikely that he would knowingly harm our useful birds, his most valuable allies and the greatest enemies of destructive insects.

I believe that a great deal of work along educational lines remains to be accomplished and that best results will come through teaching bird conservation in our schools. Only a few years ago it was not an uncommon occurrence to find boys and girls in possession of considerable collections of songbird eggs. Today about the only place one can find such collections is in our museums. The great educational work that is being done by our universities, agricultural and rural schools and the efforts of the instructors in these schools are vital factors in the measures directed toward the conservation of our feathered friends.

Every boy is inherently interested in birds but sometimes his procedure is destructive to the objects of his interest. In nature study work children should learn the habits of our common birds and the services that they perform for us. They should be told of the natural dangers to which birds are constantly exposed and of the long, dangerous fall and spring migrations undertaken by many. They should be instructed and encouraged in the winter feeding of birds and discouraged from collecting birds' eggs. Remember that too much forbidding and preaching may have a harmful effect for in the heart of every boy lies dormant a spirit of opposition. Nature study not only gives youth firsthand information on birds but also nurtures a love for and an understanding of all wild life.

There is still a long list of destructive agencies operating against our birds. In addition to the natural enemies are the thoughtless boy, the unwise farmer, the "adult fool" gunner and the house cat. In the years to come the value of our educational program in reducing these evils should be more and more apparent.

A few years ago a game protector of New York State was shot to death and another seriously injured while performing their duty in apprehending two men who were shooting songbirds. It is disquieting to find that even now some misguided persons will destroy harmless wild life. On the other hand, it is gratifying to know that such persons are comparatively few. About the only kind of educational program that can be appreciated by them is that dictated by the judges and carried out by law enforcement officers and state prison wardens.

In Salt Lake City, Utah, there is a beautiful monument erected to commemorate an incident in 1848 when large numbers of gulls saved the settlers from starvation by devouring the crickets that were destroying their crops. The people looked upon the advent of the gulls as a heaven-sent miracle. Our whole verdant world is the real monument to our useful birds without whose help vegetation might not exist. While it is our inherent right to enjoy all the benefits we receive from our useful songbirds, it is our duty to transmit this inheritance, in a good state of preservation, to those who come after us.

WATER BIRDS AT NIAGARA FALLS

JAMES SAVAGE, BUFFALO

Niagara Falls has been a mecca for tourists and newlyweds for many generations. Its Indian name is translated "Thundering Waters." There is an Indian legend telling of the annual sacrifice of the prettiest maiden of the tribe by casting her adrift in a canoe to meet death in the cataract. A close parallel in real life is the annual sacrifice of countless water birds which has been going on at this same altar through the centuries.

Most spectacular is the tragedy of the whistling swans. These great white birds are the very largest that can be regularly observed in New York State. They measure four to four and one-half feet from tip of bill to end of tail; have a wing spread of six to seven feet and a weight of 12 to 18 pounds. Since they have enjoyed complete protection against slaughter by gunners, their numbers have increased to such an extent that we can forecast with reasonable certainty their appearance on Niagara river during the third or fourth week of March. In the autumn there is less regularity about their presence or the date of their arrival, but observations over a number of years would indicate that between October 15th and November 15th is approximately the right time.

After a winter spent in luxury and ease on the Potomac river, Chesapeake bay, the sounds of North Carolina and Mattamuskeet lake, they respond to Nature's urge and begin their long migration toward their breeding grounds beyond the Arctic circle. Frequently at this time of the year the lakes and rivers enroute are still frozen. After a nonstop flight of 450 miles from their winter haunts they descend wearily to the welcoming open water of upper Niagara river. Gratefully resting on its placid surface, they are carried by the swift current toward impending doom.

If the weather is clear and they are not sleeping, they may be warned in time by the roar of the falls or the roughening of the water as they approach the danger line. But if they should be asleep or if visibility be obscured because of fog, rain or snow and these warnings are unheeded for but a few seconds, they are suddenly plunged into the rapids from which there is slight hope for escape.

When once in the rapids they become helpless because they are unable to jump into the air like a gull or a duck but must paddle along the surface to gain momentum for a take-off somewhat like the take-off of an airplane. Naturally they would face upstream and make vain attempts to rise but the swift flowing water thwarts them like a treadmill. Presently they are hurled over the brink of "Thundering Waters" and falling vertically 150 feet are submerged to unknown depths in the chasm at the foot of the cataract.

Each year seems to witness the sacrifice at Niagara's shrine of some of these lovely whistling swans honeymooning on their journey to homes in the North. Some years the numbers meeting such an untimely end are so great as to attract public attention. Newspapers and scientific magazines publish accounts of the tragedy. Such an occurrence happened March 15, 1908, when many more than 100 swans met death in the gorge.

Another swan catastrophe occurred on March 25, 1928, when by actual count

there were 224 swans in the gorge. The weather was foggy with a drizzling rain. Because of poor visibility it was impossible to see the swans as they came over the brink of the cataract but during a timed half-hour from 3.45 to 4.15 o'clock in the afternoon the writer saw 29 swans emerge in the boiling, milky water from the foot of the falls. Of these, seven were dead and floated downstream. Many of the others seemed helpless at first with wings spread flat on the water but after much struggling all regained their usual posture and swam over to associate with other survivors on the rocks along the Canadian shore. Flocks of four to 15 each having sufficiently recovered from shock were seen to rise from the water and fly up over the falls to continue their northward trek.

Before the Migratory Bird Treaty between the United States and Canada became effective and put a stop to the spring shooting of geese and swans which had been permitted in Canada, many of the birds which otherwise would have lived were shot or clubbed to death and used for food. Now, no shooting is permitted and the police at the Victoria Park station are watchfully alert to aid any distressed bird that can be reached and bid it bon voyage with a band on its leg, a memento of the occasion. Museums in New York City, Buffalo and Toronto and the New York State Museum in Albany have enriched their collections by specimens secured at Niagara Falls.

The whistling swan is not the only species to suffer accidental death at the famous cataract. On Sunday, October 28, 1934, pandemonium broke loose over the stretch of water between Navy island and Niagara Falls where a great flock of blue geese and lesser snow geese were calling incessantly because of their strange predicament. They had strayed from their regular route of migration between James bay and their wintering ground on the Gulf coast of Louisiana and had decided to rest awhile on the treacherous Niagara river. But there was no rest for them on its fast moving waters.

This flock was variously estimated at 7000 to 10,000 individuals of which about 5 per cent were lesser snow geese. The swift current carried them close to the Canadian shore down to the danger zone where the rapids begin. From this point they would take to the air and fly upstream the distance of a mile or two and in 15 to 18 minutes would be again at the head of the rapids and forced to repeat the " merry-go-round " or take the plunge into the rapids and gorge. The confusion of birds continually flying upstream low over the heads of others floating downstream while all were calling loudly in their distress was a spectacle witnessed for hours by hundreds of persons along the shore. Many of the geese were carried over the falls and were picked up dead or alive from the lower river.

Not alone are the geese and swans in meeting disaster. A similar fate is meted out impartially to the ducks. Mallards, black ducks, canvasbacks, redheads, scaups and many other ducks have " shot the chutes " into the lower river. The writer once secured a Hutchins' goose here, which is the only specimen from this area in our Buffalo museum. Even grebes, loons and cormorants have been rescued from the eddies by men using long cane poles.

Although tragedy may overtake those feathered friends that venture in dangerous parts, the water adjacent to Goat island affords sanctuary to large numbers

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A MIDNIGHT ATTACK

RICHARD H. POUGH, NATIONAL ASSOCIATION OF AUDUBON SOCIETIES

What would you think if your hat were suddenly knocked from your head as you walked along the street? Well, it happened to me last spring and I was at a loss, at first, to explain it. Since it was not winter I could not attribute it to a snowball at the hands of some boy, and as I was all alone on a quiet suburban street, it seemed most mysterious. I had not heard anything, nor had I seen anything, which is not surprising as it was night and I was rather far from the nearest street light.

So strange was my experience that I turned around and returned to my friend's house up the street to tell him about it. To my surprise I learned that others had reported having had similar experiences recently. Strangely enough, these attacks all seemed to have occurred at approximately the same place, so we decided to investigate.

It was agreed that once more I would go down the street and that my friend would follow a few feet behind armed with a flashlight. In case he should not see what struck me, I was to yell if anything happened. Proceeding somewhat cautiously this time and making an effort to be as quiet as possible, I kept my ear attuned to catch any sound. Suddenly, without a warning, my experience was repeated. Out came the yell I had been holding ready and on came the flashlight behind me.

By the rays of the light I saw a whitish object which seemed to be floating through the air. Suddenly it disappeared. In a moment my friend came running up. He had seen about the same thing I had. It looked to him as though something had swung down from a branch which hung over the sidewalk at that point and after having struck my hat, swung back.

Picking up my hat, we both followed the beam of the flashlight as we directed it up into the tree over our heads. Suddenly I caught a movement and saw that what I had at first supposed was the end of a broken branch was alive. It did not take us long to determine that my mysterious assailant was without doubt a screech owl. After a good laugh over the scare this little eight-inch bird that could hardly weigh over a third of a pound had given me, I went on my way home.

On the way I thought about the matter and sought for a possible explanation. Hardly was I up the next morning before my friend called to say that he thought he knew why I had been attacked. It was agreed that I should come out as early as possible that afternoon to investigate the matter further. As I came up the street from the station I found my friend, standing in the street with his binoculars, carefully looking over the large red maples bordering the street. I found that we had both recalled our experiences in a tern colony, where the parent birds had repeatedly dashed at our heads in an apparent effort to drive us away from their young. Connecting the two experiences, my friend was searching for a cavity that might possibly contain a screech owl nest. No bird was in sight, but we did spot several holes where the soft wood of the maple had rotted away following the tearing off of a large branch by a storm or ice.

One hole looked especially promising as it was only a few feet from where we figured we had seen the owl sitting the night before. It was right over the side-

Bureau of Radio and Visual Aids
Screech Owl Peering from Hole in Tree

walk. As it was the lowest of all, we decided to start on it and went in search for a ladder long enough to reach it.

The ladder looked as though it might be long enough and as I was the tallest, it was decided that I was to climb it. When I got to the top rung, I found that the hole came just above my head. As I started to stand on my toes to try to see in it, something popped out right in my face, knocking my hat off and sending it tumbling into the dusty gutter for its third visit. The screech owl, for as you may have guessed, it was none other than our ghost of the previous evening, perched on a branch only a few feet away and watched.

Reaching gingerly into the hole, I felt something fuzzy and pulled out a very dazed little owl covered with soft grey down. Passing him on down to those below, I reached in again and before I got through I had passed out seven little owls. Perching them in a row we took their pictures and then returned them to the nest. Much to our surprise, in view of its actions of the previous evening, the parent bird viewed the whole procedure from its perch without moving.

Knowing that young birds should not be handled or removed from their nests, we were a little worried as to whether the parents would desert the young owls. Several days later, just to allay our fears, we again climbed and looked into the nest. My precautions to insure against further damage to my hat were unnecessary, as no adult was on the nest at this time. The young birds seemed healthy, and although we never found the old birds near the nest again during the day, the young must have been fed regularly during the night, as they eventually left the nest and were frequently seen in the neighborhood during the rest of the summer.

WATER BIRDS

(Concluded from page 243)

of water birds through the fall, winter and early spring months, where they may be observed advantageously by bird students. We have seen here such rare species, for this locality, as Brunnich's murre, harlequin duck, European widgeon and purple sandpiper. The purple sandpiper was first seen by Dr L. R. Herndon and others on December 18, 1938, and was examined at close range by many observers at various times until January 14, 1939. A few great black-backed gulls with occasional glaucous and Iceland gulls are to be seen nearly every year among the three common gulls. Black ducks, mallards, · golden-eyes usually accompanied by a few pintails, gadwalls and teal can be viewed at close range as they feed in the comparatively still water at the head of the island or disport themselves in the swift water above the American falls.

DO BIRDS GET SICK?

CARLTON M. HERMAN, NEW YORK ZOOLOGICAL PARK

Much has been written about the home life of birds, their songs, their eggs, the colors of their feathers, their migrations. In recent years an increasing amount is being published about their anatomy and physiology with many attempts to explain the reasons for their actions and migrations. We are even finding out about bird hormones.

If you were to become ill you would go to bed and rest. A doctor would prescribe the proper medicine and a nurse or someone else would take care of you. In nature it is every bird for himself. If a bird gets sick he becomes weak. This weakens his flight so that some predatory bird or mammal, or perhaps a snake, quickly makes a meal of him. In the past we usually have looked upon such a chain of events as "survival of the fittest." Because Nature has provided such a method of "caring" for the sick, science has had little opportunity to learn much about bird diseases.

Only in widespread epidemics, where large numbers of birds have died at one time, have we been able to observe diseases of birds at firsthand. Botulism, a food poison disease, has killed thousands of ducks in the marshes around Great Salt lake in Utah as well as several other places in the country. Botulism occurs in ducks, gulls and shore birds in New York State but, fortunately, only a few of our birds die from it. The disease is caused by a toxin produced by a particular type of bacteria that lives on decaying meat. If the meat is in a shallow pool the water becomes saturated with the poison so that any bird drinking this water will become affected with the disease. If fresh water is given in abundance soon enough after infection the characteristic paralysis will often disappear and the bird may recover completely.

Weak or sick birds will always take advantage of the free meals provided by bird lovers who feed them. The advent of bird banding has afforded an excellent opportunity to investigate some of the chronic diseases. Long ago we had learned that birds in captivity in private aviaries and zoological parks die from many diseases that are similar to those which occur in man. We are now learning that birds in the wild state suffer from the same ailments. Injury, of course, takes its toll. Pneumonia is very common. This past summer I examined two house wrens that died of pneumonia on their nests in the suburbs of New York City. A robin was sent to me from Garden City, Long Island, with a very severe case of peritonitis. A disease similar to typhoid fever is also frequently observed.

Among the chief causes of illness in birds may be listed those diseases caused by parasites. Many of our native birds have malaria, a disease caused by parasites that live in the blood. This is a widespread disease in man in the tropics. It is transmitted by mosquitoes. There have been very few cases of malaria in man in New York State in recent years partly due to extensive mosquito control. But malaria is still common in our birds. Besides the type transmitted by mosquitoes, there are two others: one transmitted by hippoboscid flies, the other by black flies. One species of malaria has been found only in robins, another in catbirds. There is a type of malaria that has been found only in cliff swallows from about Lake

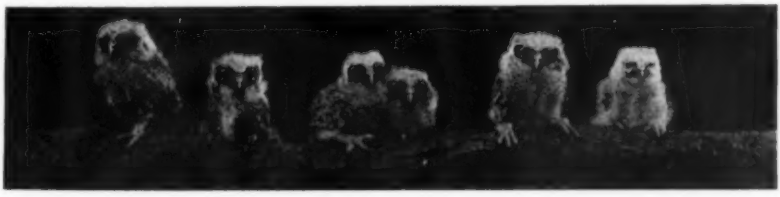
Champlain and Oneida lake. We do not know how sick our wild birds get from their malaria.

Ectoparasites, parasites which live on the outside of the bird, are often seen at banding stations. Feather-eating lice, known as Mallophaga, are frequently observed. They are likely to be particularly common on birds with deformed bills. Mites, little animals the size of salt grains, are often seen in great numbers on sick birds. They feed on the bird's blood. There is also a small mite that infects the Mallophaga. Mallophaga are also known to hitchhike on hippoboscid flies. In the manner of the "big fleas with little fleas," we can have the parasitic cowbird infected with a fly which in turn is carrying a louse that is infected with mites. Besides this, the fly can also be carrying malaria and transmitting it from bird to bird.

Fleas, although very common in birds' nests, are not frequently seen on birds. They occur in great numbers in the nest material and debris of bluebirds and tree swallows and can be collected after the birds have flown. Protocalliphora is a parasite capable of doing great damage to nestlings. These are flies that are parasitic during the maggot stage when they suck the blood from the baby birds.

In the past few years a canker disease, which may reach epidemic proportions, has been observed in mourning doves. It is apparently common during the autumn in New York as well as other eastern states. A large, cheesy, yellowish mass grows in the back of the mouth which eventually, in severe cases, occludes the food passage so that the bird dies of starvation.

There is still a great deal to be learned about the diseases of wild birds. A number of pathologists and students of bird diseases throughout the country are cooperating in this study. They are always eager to examine any dead birds you may find, in the hope of discovering the cause of death. If any dead birds come into your possession send them as quickly as possible to either the Hospital and Laboratory, New York Zoological Park, 185th street and Southern boulevard, New York City, or to Dr Gordon M. Meade, Strong Memorial Hospital, 260 Crittenden boulevard, Rochester, N. Y.



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AUTUMN SHORE BIRDS IN THE ALBANY REGION

DAYTON STONER, STATE ZOOLOGIST, NEW YORK STATE MUSEUM

Shore birds may be described in general terms as long-legged, long-billed, gray-plumaged species commonly seen on mud flats and sandy or rocky banks of streams or other bodies of water. Owing principally, I think, to their wariness and more or less similar general appearance and hence the corresponding difficulty in identifying them, some bird watchers are satisfied to recognize perhaps the killdeer and the spotted sandpiper and to relegate all others into the common denominator "sandpipers." With a reasonable amount of effort, however, even the amateur can learn to identify satisfactorily most of our species in the field.

Photograph by Allen Frost

Killdeer on Nest

The term "shore bird" is commonly employed to designate any of the closely related plovers, snipes, sandpipers, phalaropes and their allies. Together with the gulls, terns and associates, they constitute the taxonomic order Charadriiformes. The shore birds, proper, comprise six families but in interior New York State only two families are well represented.

Of the more than 40 kinds of shore birds recorded from this State, all are migratory, several of them breeding in the far north and wintering in South America. Some forms, such as the killdeer and black-bellied plover, may winter in southern United States, the former irregularly in southern New York. Usually not more than a dozen kinds are observed regularly in the Albany region; a half-dozen additional kinds may occur rarely or irregularly but only five or six forms nest in this territory.

Most shore birds occur in flocks or small groups. The remarkable ability of some species, such as the least and semipalmated sandpipers, in performing highly complicated aerial evolutions while maintaining an orderly compact formation is a never-ending cause for wonderment.

In the present discussion I shall not mention all the forms of shore birds found in the Albany region but report on some of the rarer ones that have come under my observation in recent years and record certain late seasonal occurrences of other and commoner species. These include representatives of three families, the Charadriidae (plovers), Scolopacidae (snipes, sandpipers and allies) and Phalaropodidae (phalaropes).

Among the plovers three forms deserve mention. The little semipalmated plover with the single black ring about the neck often occurs late in summer on the algal-covered face of the cement dam which extends across the Mohawk river at Lock 7 of the State Barge canal about ten miles northwest of Albany. Ordi-

narily this plover has left the capital district by October 10th, but on October 28, 1937, I recorded two individuals on a sand flat bordering the Hudson river about 18 miles south of Albany.

In August 1939 this plover was more than usually common on the expansive mud flats of the Watervliet reservoir 12 miles west of Albany. Because of the exceptionally dry summer the water in the reservoir had reached a very low stage and thus left exposed many sandy islets, points and flats with interspersed miniature bays, lagoons and pools. These feeding areas attracted large numbers of shore birds and provided excellent opportunity to view them.

Our commonest as well as most beautiful and voluble plover is the killdeer. From early March until well into autumn its characteristic plaintive "kill-dee," "kill-dee," is broadcast throughout the countryside. On occasions it has been recorded as a winter visitant. My late dates are November 11, 1937, when three individuals were seen at the south end of Saratoga lake, 32 miles north of Albany; and November 20, 1938, when I saw four birds on the same beach. The larger size (10.5 inches), reddish brown rump and double ring around the neck are good field characters.

Photograph by Allan D. Cruickshank

Black-bellied Plover in Winter Plumage

The black-bellied plover for the most part frequents coastal shores and has been but rarely recorded from the Albany region. On October 8, 1937, I counted 11 individuals in a sheltered inlet on the east bank of the Hudson river at Stuyvesant. Four days later I noted a single bird at that point; and on November 11, 1937, I saw one individual with three killdeers on the sandy beach at the south end of Saratoga lake. This is a very late seasonal record for this territory. My next record for this bird is August 9, 1939, when two individuals in partial winter plumage were observed feeding on the small, sandy islands at the Watervliet reservoir. This largest of New York State plovers is to be distinguished by its large head, high white forehead, stout bill and black axillars, long feathers at the sides of the body under the wings, visible when the latter are raised.

In inland New York probably the best known shore bird is the spotted sandpiper or "tip-up." It arrives toward the latter part of April and remains all summer. Other well-known, closely related species are the woodcock and Wilson's snipe. My latest autumn date for the latter, and a very late seasonal record for this locality, is November 11, 1937, when I flushed a single bird from its probing activities in moist beach drift at the south end of Saratoga lake. Fairly common, too, is the solitary sandpiper with whitish eye-ring, black rump and legs and white outer tail feathers. It is a transient, likely to be commoner in fall, and was notably prevalent in August 1939.

Two sometimes fairly common transients, particularly in fall, are the greater

Photograph by Allan D. Cruickshank

Young Spotted Sandpiper

yellow-legs with its long, slightly recurved bill and the lesser yellow-legs with a smaller, straight bill. The points of interest that I have to report are the late seasonal occurrence of the former, October 17, 1937, at Tomhannock reservoir about 17 miles northeast of Albany, and the surprising abundance of the latter at Watervliet reservoir on August 9, 1939, when scores of the birds were feeding on the mud and sand flats.

While the pectoral sandpiper usually occurs in the Albany region as a transient in both spring and autumn, it is most likely to be seen at the latter season. Because it is seldom recorded later than mid-October, my record of two individuals feeding in shallow beach pools along the southeast shore of Saratoga lake on November 14, 1937, is of special interest. I approached to within a few feet of the birds and satisfied myself thoroughly as to their identity.

The white-rumped sandpiper is another form that has been only rarely recorded from the Albany region. Its small size, buffy general coloration and white upper tail-coverts are helpful field characters. On October 12, 1936, I saw a flock of 17 individuals on a grassy flat near the water's edge at Tomhannock reservoir, Rensselaer county. Again, on October 3, 1937, two birds in company with a few semipalmated sandpipers were feeding near the top of the dam at Lock 7 of the State Barge canal.

In the Albany region the red-backed sandpiper is generally regarded as a rare, irregular, autumnal transient. On October 28, 1937, in a sheltered cove along the east side of the Hudson river near Stuyvesant, I discovered three examples in winter plumage. The birds were viewed at close range with binoculars so that the ashy-brown plumage, grayish breastband and rather long, decurved bill were plainly seen. Again on November 4, 1938, two of these sandpipers were observed at the east side of Saratoga lake. They were busily probing in shallow beach pools and the swampy lake shore.

Another rare transient visitor among our shore birds is the short-legged and disproportionately long-billed eastern dowitcher. It partakes somewhat of the appearance of Wilson's snipe but is usually found on mud flats. On August 25, 1939, I observed a single bird on the muddy shallows at the northwest side of the Watervliet reservoir not more than 100 feet from U. S. Highway No. 20. For a half-hour I watched the dowitcher, sometimes at a distance of less than 50 feet. In feeding it moved about deliberately, stopping at intervals to probe deeply into the mud with a series of very rapidly executed up-and-down movements. Several lesser yellow-legs, two greater yellow-legs, a solitary sandpiper and several killdeers shared the same

small area. This was the first and only time that I had come upon this bird in the Albany region in more than seven years. I also observed one individual, probably the same one, at the same locality in detail, on August 30, 1939.

The phalaropes, sometimes called "swimming sandpipers," are rather small, densely plumaged shore birds with lobed front toes and considerable ability as swimmers. For the most part they occur along our seacoasts and are not often recorded in the interior of New York State. Only three species are known.

In all my field experience in the Albany region I have come upon only one representative of this family, a northern phalarope at the Watervliet reservoir on August 11, 1939. The bird was swimming in curves and circles with peculiar, quick, darting movements and much bobbing of the head in a shallow pool about 100 yards off shore. Although in obviously immature plumage, the white underparts, dusky crown and line down the nape, blackish back, scapulars and tertials interspersed with whitish, dark auricular patch, long neck and peculiar though characteristic actions left little room for doubt as to its identification.

Fourteen species of capital district shore birds are mentioned in this account. I hope that not only will the several unusual records here published for the first time be of general interest but also that a large number of readers will be prompted to learn to recognize these birds in the field. Shore birds are perhaps best observed in this locality during late summer and autumn when they are on their southerly migration journey. At that season they are more plentiful and less wary than at any other time. A day spent in quest of them along the banks of low streams and the mud shores of lakes and reservoirs with field glass and bird guide will prove both interesting and instructive.

Photograph by Dayton Stoner

Watervliet Reservoir in Late Summer of 1939

BIRDS' NESTS

S. J. PASHLEY AND WILLIAM MOSHER, HUDSON FALLS

Photographs by S. J. Pashley from Nests in the Collection of William Mosher

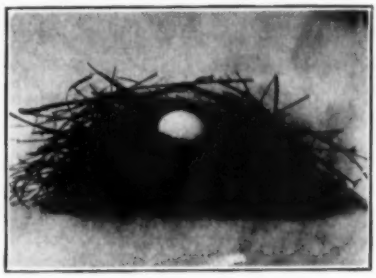
A most interesting branch of ornithology is nidology, the study of nests. The nest-building instinct in birds has undoubtedly developed over a long period of time for some birds build very simple nests while others construct complex ones. The degree to which this nest-building instinct has developed is a feature which merits careful consideration.

Neither the whippoorwill nor the nighthawk builds a nest. The former lays its eggs in any suitable depression on the forest floor, while the latter frequently deposits its eggs on the flat gravel roofs of high buildings.

The killdeer exhibits a slightly more complex nesting behavior in that it usually outlines roughly the nest site with a few pebbles or small sticks, although sometimes even this meager effort is omitted. A close relative, the upland plover, lines its nesting depression with a little grass. Ducks and geese line their nests with down.

Of our smaller ground-nesting birds the meadowlark and ovenbird construct well-built domiciles. The former partly covers its nest with a bower of grass, while the latter builds a roof over practically the entire nest.

Among the hole-nesting species, the chickadee, nuthatch, bluebird, house wren, starling, English sparrow, several of the owls and others, little effort is made to weave together the nesting materials. The belted kingfisher nests in a bare subterranean burrow slightly enlarged at the inner end. Woodpeckers usually excavate their own nest cavities, to which no nest material is added. Incidentally, it is of interest to note that many of the cavity-nesting species readily use the birdhouses erected by man.



Loosely Constructed Twig Nest of the Mourning Dove

Most birds which nest above ground build rather substantial dwellings, although some construct rather rudimentary nests with a scanty amount of material loosely placed. The nests of the mourning dove and cuckoos are examples of this type.

Among the birds in which the nest-building instinct is highly developed we find three general types of nests:

First, there are the nests in which mud is used as the main nesting material. The barn swallow and cliff swallow build nests of this type. The barn swallow builds inside of barns while the cliff swallow places its gourd-shaped nest under the eaves. Both species line their nests with feathers.

Second, there are the nests in which fine material is felted or matted together. The nest of the ruby-throated hummingbird, built of plant down and spider webs and covered with lichens, is a splendid ex-

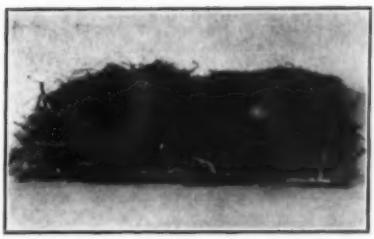
ample of this type. The wood pewee builds a similar but larger nest.

The third type is the woven nests, most skilfully constructed of all bird homes. This type comprises two principal styles, those placed in the fork of a tree or bush or otherwise supported from below, and the hanging, pensile or semi-pensile kind. The kingbird, cedar waxwing and redstart build supported woven structures, while the Baltimore oriole, red-eyed vireo and ruby-crowned kinglet usually construct nests unsupported beneath.

Nest of Kingbird Saddled on a Branch

A unique type of nest is the pile of floating decaying vegetation assembled by the pied-billed grebe and attached to rushes growing in the water so that it rises and falls with any change in the level of the water. The chimney swift builds a highly specialized nest of twigs glued together and fastened to the inside of a chimney with the bird's saliva.

Most birds use a nest only once, but the phoebe and several other species will occasionally raise a second brood in the original nest; and a robin's nest has been discovered on which the bird has superimposed 11 consecutive nests on top of the original. This nest stood about 15 inches high. Another oddity which was discovered is a duplex robin's nest.



Duplex Robin's Nest Consisting of Two Separate Nests Woven Together Side by Side

It consists of two perfectly formed nests joined and woven together side by side. The nest was found on a large flat beam in a very open barn.

The great horned owl does not rely on its own ingenuity but repairs the nest of a crow or a red-shouldered hawk.

An example of complete abortion of the nest-building habit is found in the cowbird, which builds no nest, but lays its eggs in the nests of other birds. The redhead duck, although it usually builds a nest, occasionally lays some of its eggs in the nest of the canvasback duck.

If several birdhouses are present in a locality in which a house wren chooses a nesting site, the wren sometimes fills with rubbish and sticks all the houses

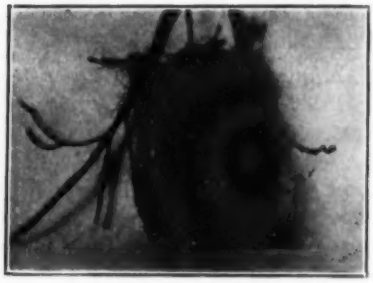
Nest of the House Wren in a Bird House (Part of Roof Removed to Show Nest)

except the one in which its own nest is built, thus preventing other birds from sharing its territory.

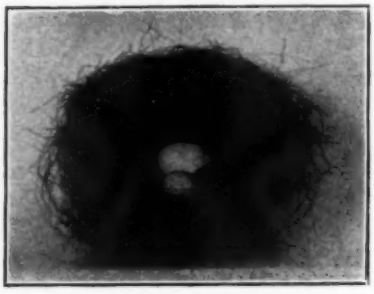
A study of the various materials used in nest building yields a long list: sticks, twigs, rootlets, chips, bark, pine needles, grass, weeds, moss, plant down, lichens, plant strippings, leaves, newspaper, string, stones, mud, spider webs, fur, feathers, down, horsehair, fish bones, and snake skin which, oddly enough, is placed in the nesting cavity of the crested flycatcher. Examination of an unusual robin's nest showed that it contained 99 feet of string, when the pieces were put end to end.

Birds with but little nest-building skill construct the entire nest of one material or use a homogeneous mixture of materials, while the more skilled builders as a rule construct the outside of the nest of rather coarse material and line it with finer material. An example of the first type is the nest of the English sparrow, while the chipping sparrow represents the second type, using rootlets for the outside of its nest, and horsehair for the lining.

The location of the nest is also of interest. A large percentage of nests are on the ground. In this group of ground-nesting birds is some example from nearly every order and family of birds: marsh hawk, snowy owl, quail, mallard duck, whippoorwill, killdeer, herring gull, black and white warbler, yellow-bellied flycatcher (in mounds of moss), brown thrasher, hermit thrush, vesper sparrow, bobolink and many others. A few species, such as the red-winged blackbird, often nest on tussocks of grass or in flags. Other species, among them the catbird and goldfinch, commonly nest in bushes. Among the tree nesters are the robin, crow, blue jay, hummingbird, Baltimore oriole, red-eyed vireo and many species of hawks. The white-breasted nuthatch usually nests in woodpecker holes in poplar or white birch, while the crossbill and pine grosbeak prefer to nest in conifers.



Intricately Woven Pensile Nest of the Baltimore Oriole



Horsehair Lined Nest of the Chipping Sparrow

Another point of interest is that in some species, such as the English sparrow and the woodpeckers, both parent birds help to build the nest, while in most of the species where the male is brightly colored, as the indigo bunting and scarlet tanager, the female alone does the nest building.

These facts and many others are revealed to the student of nidology.

THE ALBANY PRAIRIE WARBLER COLONY

EDGAR BEDELL, SCHENECTADY

Contrary to what one might be led to suspect from its name, the prairie warbler is not an inhabitant of grassy places. Recently it has been found nesting in the Pine Bush area about seven miles west of Albany.

The Pine Bush section is a rolling, barren, sparsely wooded sand plain extending for miles to the west of Albany. In summer it is a hot, dry desert of sand, covered with scrub oak, pitch pine, blueberry bushes and brush, so dry that each fall portions of it are burned over by fires. Series of low ridges running east and west traverse most of the terrain. The commoner birds found here include the field sparrow, song sparrow, vesper sparrow, towhee, brown thrasher, chestnut-sided warbler and northern yellow-throat; the rarer ones are the bluebird, yellow-breasted chat, black duck, golden-winged warbler, Canada warbler, marsh hawk and alder flycatcher; and, of course, the kingbird and pine warbler.

On May 20, 1937, I received a letter from Dr Homer D. House, New York State Botanist, stating that he had just seen a bird in this section which he believed to be a migrating prairie warbler and that a bird of this species had been observed in the same locality several years before.

Four days later I thoroughly explored the region designated and found the bird, a male, singing from a pine tree. This delighted me, for the nearest known breeding ground of any extent was along the Atlantic coast about 150 miles away; even migration data for the Albany region were unknown. Besides, I had not seen a prairie warbler for years, although I had been familiar with it on Cape Cod. During the following months I made several trips in search of this bird but my warbler had disappeared.

Later I decided that possibly the prairie warbler might be nesting there, for the habitat was very similar to that occupied by the species in its summer home along the coast.

The following year, 1938, I made daily trips from May 1st and on May 18th found the first arrivals, five males and two females, apparently settled for the summer in a locality one-half mile over the ridge from the spot where the first bird was discovered. As weeks went by I counted 20 singing males in a colony extending over a distance of approximately a mile.

This past spring, 1939, the site of the colony was burned over and I feared that the birds would pass on, but on May 14th four males arrived. By May 28th I had located 20 males and before the middle of June I had the haunts of 40 plotted on a topographic map. Here was a great, straggling colony spread over a distance of four miles from east to west and a mile from north to south. Not one pair appeared, however, on any of the recently burned over land.

The prairie warbler is easy to find if its song is known, for most of the time of the males is spent in singing from a tall tree near the nest. In almost every case the birds were found on the upper slopes of the south side of the ridges singing from branches about two-thirds the way up in solitary pitch pines rising from the open expanses of breast-high scrub. Usually two or three widely separated birds would be within hearing at each desirable site.

THE HERRING GULL ON LONG ISLAND

WILLIAM TODD HELMUTH 3D, EAST HAMPTON

After many years of energetic bird study and after the aggregation of great piles of notes upon the subject, it would be surprising if the student did not feel occasional pangs of doubt as to the value of his efforts, whenever he happens to contemplate, *in toto,* the heap of battered notebooks which are the visible evidence of his long-sustained enthusiasm. A little attention to the matter, however, should convince him that his time has not been spent vainly, unless, indeed, he feels that the subject in itself is vain and valueless. Perhaps conclusions not devoid of interest, and even of importance, may be drawn from such accumulations of data and may help sustain the flagging zeal of some who feel that they have exhausted the possibilities of the local avifauna and, therefore, sit about sighing for new ornithological worlds to conquer. My good intentions, therefore, will be regarded as my motive for choosing to illustrate this point by an example from my own field notes, and not the motive of conceit.

On eastern Long Island, which is my home region, the herring gull is an almost too familiar bird. Although it has lately received some favorable attention because of the banding of many young gulls at their nesting colonies, the bird is still regarded by many as a bore, and often as an irritant. Even my earliest notes, made in 1907, hold many references to it, but since they are the notes of a very young beginner in bird study, it will be safer to ignore them, allowing three more years for the acquisition of experience. Long columns of figures represent the estimates I made from day to day, between 1910 and 1940, of the number of herring gulls seen on each of my field trips, and even a cursory glance shows plainly that the species has increased substantially and progressively during this period. This remains clearly true even after making the necessary allowances for those errors which must appear in all such attempts at counting the number of any abundant species of bird; and it also remains true after roughly correcting other potential sources of error, such as the varying length of time spent in the field on different days and similar considerations. Fortunately in the case of the herring gull its very increase in abundance lessens the danger of exaggeration, for it is so common and " uninteresting " that there is an unconscious tendency to forget about it.

Photograph by Guy Bailey

Herring Gulls Feeding

There is more to learn from the notes, however, than the obvious fact of the herring gull's increase. Memory alone might suffice for that. A minimum of analysis permits us to piece together a story which I shall try to tell consecutively. Between 1910 and 1920, herring

gulls were common on Long Island, but only as winter visitants. In summer only a few could be found, and these only at certain favored spots. This handful of summering gulls consisted almost entirely of immature birds, and to see more than 5 per cent of adults at this season was unusual. By mid-August a distinct influx of herring gulls began, continuing until a maximum was reached, usually in early December. As midwinter approached there was a slight decrease, but a second maximum occurred in mid-April, lasting into May. By June 15th gulls were virtually absent along the south shore of Long Island and also in the coastal ponds; but on Cartwright shoal, a narrow, sandy islet extending into the bay from the southwest tip of Gardiner's island, the immature birds, above mentioned, invariably could be found.

Beginning, roughly, in 1920, but more markedly after 1926, the progressive yearly increase in herring gulls became greater and greater. The most interesting thing about it was that it was relatively much greater as regards summering individuals than the normal winter visitants. In 1924, on July 4th, more than 200 were resting on the shoals, many of them adults. In July, too, they were seen frequently along the ocean beach, and in regions where they had seldom, if ever, occurred at this season in earlier years. On 90 field trips during June, July and August, from 1910 to 1915, the total number of herring gulls seen had been 861; in 85 similar trips over the same territory, but from 1937 to 1940, the number of gulls counted was 9312, and this is probably an underestimate. It had, then, become in summer almost ten times as common on eastern Long Island as it had been some 20 years before.

That they would ever breed here never occurred to this observer until the interesting fact actually happened. In June 1936 my brother, John L. Helmuth, found a herring gull's nest containing three eggs, and a dead young bird in down, on Cartwright shoal, and also noted intense anxiety in the dozen or more adult gulls which hung squealing over his head. In August 1937 Dr C. B. P. Cobb, Mr and Mrs Roger Peterson and I visited the shoals and found some 40 empty nests and many first year gulls still unable to fly. In 1938 the colony had increased but slightly, and an addled egg was carried away for evidence. On June 9, 1939, Christopher McKeever and I counted 111 nests with eggs or young and 16 nests still unoccupied. This year the gulls were nesting on open sand instead of in the concealment of tufts of beach grass (Ammophila), as formerly. We found additional colonies in two distinct areas on the main part of Gardiner's island.

These colonies are still, so far as I know, the southernmost breeding stations of the herring gull on the Atlantic coast. A single nest and eggs were, however, found at Moriches inlet by LeRoy Wilcox, who therefore holds the record for "farthest south" in breeding herring gulls. This nest, unfortunately, was deserted by the birds before the eggs had hatched.

The story of the herring gull's increase and eventual appearance on the list of the breeding birds of Long Island is only one obvious, though not unimportant, illustration of the sort of material which is hiding in any collection of "bird notes," provided they have been consistently kept, and in detail, year after year. One can not hope to record all items of importance

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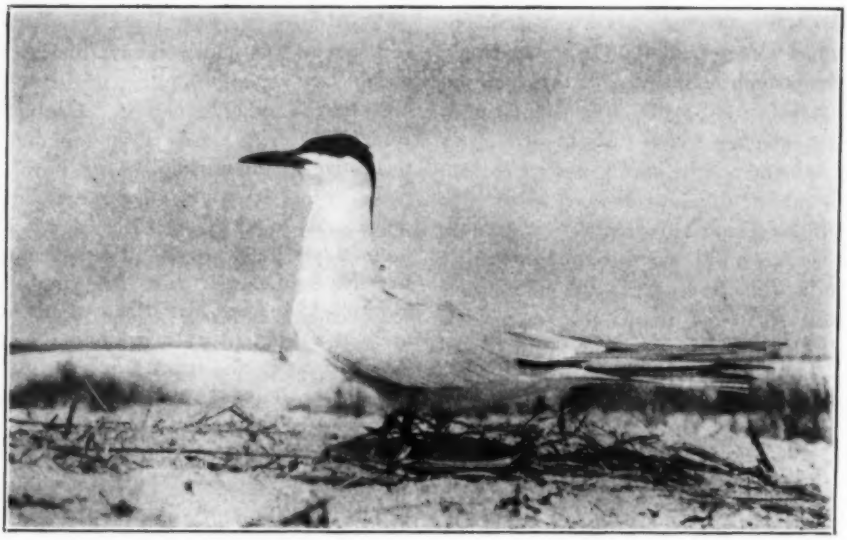


Photograph by Ronald Shainin

Common Tern Standing Over Its Nest

ENCOUNTERS WITH THE COMMON TERN

VINCENT EVERETT SHAININ, BROOKLYN

All around me, sailing through the air uttering their harsh "kee-ar" cries which blended into a constant, deafening roar, were hundreds of common terns.

Several were hovering a hundred feet above my head and each looked like a flashing white patch in the sky. Suddenly one, in emulation of an airplane in a power dive, slipped the air from beneath its wings and holding them close to its body, shot down toward me like a bullet. Instinctively I lowered my head and put up an arm for protection as the flashing white meteor checked its swift plunge a foot or two above me and zoomed swiftly upward into the azure sky. Such was my first introduction to a colony of terns.

It was a hot June day and the white sand on all sides dazzled my eyes. I was an unpardonable intruder. Here, where the steady, monotonous booming of breakers usually was interrupted only by the infrequent "kee-ar" of a solitary tern and where the rolling sand dunes normally were covered with hundreds of incubating birds. I had upset the entire routine of life.

At my appearance all the incubating birds in the vicinity sprang into the air and were uttering excited and resentful cries.

Near my feet was a nest, a cup-shaped depression in the sand with no lining. As I moved closer to see the three light

brown, dark-splotched eggs, the owner of the nest began diving at me.

The diving act, as performed by terns in an effort to frighten intruders from their nests, is rather exciting. On the downward dash from about a hundred feet the bird utters a series of rapid, staccato warning notes and as it levels out at about 30 miles an hour just above one's head it lets out a piercing scream. Once a tern dived so close to me that its wing tip struck my upraised arm.

Moving on I saw an unusual sight in another nest; an eggshell had been cut in two and a tiny wet chick was struggling to free its hindquarters from the larger part of the shell. Hiding in the shadow of a tiny clump of sea grass near-by was another small, gray, downy chick not more than two and a half inches long. Searching carefully in the shadow of other grass clumps and pieces of driftwood, I found more furry chicks, their red, black-tipped bills each sporting a tiny white egg-tooth.

The small ones apparently had not yet learned the meaning of fear, but the older ones, from four to seven inches long, were running helter-skelter, awkwardly but swiftly on their tiny red feet.

As these terns grow older the down is gradually replaced by feathers which make their appearance first on the wings. Long after the fully fledged young terns are able to fly, they are fed by the parents and are often seen swimming or resting on the water, crying for food. Adult terns rarely ride the water.

Once in late July I witnessed an unusual behavior of a common tern at Rockaway point, Long Island. Someone on the beach had thrown a large shell into a flock of flying terns and it had struck an immature bird. The tern fell to the ground, stunned, and was brought to me. After four small fish, locally known as "killies," had been ejected from its bill, one of our party, intending to give the bird its freedom, released his hold on the bird's legs, but instead of flying away, the tern merely stood upright on his open palm. This unexpected occurrence made us curious and each of us held the bird on our hands. It showed no desire to fly away and appeared perfectly alert, exhibiting no sign of fear or anger. It did seem unusual for a wild tern to stand on one's hand while its head was patted and its features closely examined. About half an hour later we placed the bird on the sand beside us, where it stood, looking casually in our direction for a few minutes, then unfolded its long, narrow wings and flew out of sight.

THE HERRING GULL

(Concluded from page 257)

because, indeed, at any given time it is impossible to know what is important and what is insignificant, even though investigating a quite specific problem. A small amount of common sense usually will advise a student as to the limits he must impose upon himself, and it is safe to predict that all danger of boredom in bird study will not exist for him who keeps a proper notebook, even though he may never be able to travel to foreign lands in search of rare, exotic birds, even if additions to his "life-list" come at longer and longer intervals, or even cease to come at all.

KILLY, THE SPARROW HAWK

L. L. HOWE, BELMONT

Photographs by the Author

Killy came to me, a young sparrow hawk of a few months. Rescued from a dog some time previously and kept in a small canary cage for nearly four months, he was a bedraggled and forlorn specimen. As his wing and tail feathers had grown they had become worn away. In addition, he was black and soiled from the cinders which covered the floor of his cage and his appearance was quite unlike that of the beautiful free specimens we see on wire or tree. No wonder his captors wanted to give him away. And, of course, this species is protected by law and so can not be kept in captivity.

But I had to keep him for a while for, with his defective wing and tail feathers he was unable to fly and would soon have starved. This was in October when the summer molt was over, so he would acquire no more new feathers until the next summer. My first act was to give him a bath in warm, soapy water. At this he protested loud and long. The ceremony was almost too much for him and I learned that, while birds like to bathe, they can not stand a soaking. This bird almost died, but after a good drying, wrapped in a cloth in front of the fire, he was as good as ever.

In captivity, hawks require a balanced diet and must be fed often. The amount of food that a small sparrow hawk can eat is surprising. I caught mice, moles and many, many grasshoppers and secured chicken heads from the market, so my pet thrived.

Killy, as I named him from his shrill cry, "killy-killy-killy," became very tame, acting as pleased as a puppy when I appeared in the morning, and would let me stroke his back; but he would fly into a rage and screech protestingly as he raked my hand with talons and beak when I attempted to pick him up.

Killy Poised for a Dart at a Grasshopper

In the spring I heard a two-way conversation between Killy and another sparrow hawk on several occasions and one day a female appeared in a near-by tree. After much loud talk she made several vain attempts to get inside the cage. The courtship continued for three days but she finally gave up and flew away, perhaps to find a mate that was free.

Several weeks later the old feathers began to fall out; bright, new ones appeared amidst the old plumage, his tail

grew long and handsome and by September he was in full, new mature plumage. It was time to say good-by. Of course I wanted a good photograph to remember him by and so, focusing my camera on the top of a small post, I made ready. Killy, however, refused to cooperate by perching there. Several times I tossed him in the air to try his wings but, while they held him aloft fairly well, he exhibited no desire to leave. Then I made several exposures of him as he perched in a small thorn tree, but instead of taking advantage of his freedom, Killy walked back through the open door of his cage, hopped up on the perch with an apparently bored air as if to say: "That's all now; let's go home." So we did.

The Pet Sparrow Hawk

On a subsequent occasion, I tossed the hawk high in the air and he disappeared among the willows at the river bank. A few mornings later I heard his voice at sunrise and the same day saw him sitting on a roadside fence. To make sure that it was really he I walked slowly to him. He let me stroke his back a moment. The thrill and pleasure that came to me then were greater than any I had experienced from holding him captive in a cage. But he was away quickly in strong, graceful flight.

Killy remained in the vicinity for many days but finally disappeared. I hope that he moved south with others of his kind and that next spring he may return to the place of his nativity. He wore a United States Biological Survey band and it is possible that we may some day learn more about him.

BIRD SANCTUARY

(Concluded from page 237)

Besides those who have walked along its bright and peaceful trails for the comfort such a place can bring, many special-purpose groups come to the sanctuary, Bird Club members, classes from many of the public schools, Boy Scouts, Girl Scouts and others, often to serve as well as to enjoy.

It is a beautiful spot. In it there is as much to see as there are eyes for seeing and as much to learn as there is thirst for knowing. It is a good place for the human soul and good for all its plant and animal denizens, whose refuge it is.

FRANKLIN B. HOUGH

(*Continued from page 227*)

the Federal Government. Lack of space prevents more than touching upon that aspect of Doctor Hough's work, but at least the high spots must be mentioned. In 1873, at Portland, Maine, Doctor Hough read a paper on "The Duty of Governments in the Preservation of Forests" before the American Association for the Advancement of Science which so impressed that body of scientific men that a special committee was set up to prepare and present to the Congress a memorial embodying a plan for the careful study by the Federal Government of the forests of the country, looking forward to the better care and management of the forests on the Public Domain plus related matters demanding government attention. Although presented to the Congress with the indorsement of President Grant, this memorial at first failed to receive attention. But the effort was continued and in 1876, our Centennial Year, an item was at last secured, as a rider to an appropriation bill, which created the position of special agent in forestry under the Commissioner of the Department of Agriculture. To this post Doctor Hough was appointed. He served until 1883.

With an appropriation of $2000 for the first year and only $2500 for the next three and with no direct, official connection with the forest lands on the Public Domain, Doctor Hough, following the line of approach for which he was especially fitted, set to work to compile in statistical form various sorts of information concerning the forests of the United States. Between 1878 and 1882 he brought out three reports and contributed to a fourth, which for a number of years constituted the best, indeed almost the only, available data on the subjects covered. That the worth of this material was recognized more than locally is indicated by the fact that for the first two reports Doctor Hough was awarded a diploma by an International Congress held at Venice in 1882.

Under Doctor Hough the work in forestry developed steadily so that in 1881 it became a division, which in 1886 was officially recognized as such by Congress. From this meager start, through later advancement to the status of a bureau, always in the Department of Agriculture, has developed the Forest Service of today with a personnel of more than 3000 technically trained workers to administer more than 175,000,000 acres of national forests, to conduct the activities at 12 forest experiment stations and the forest products laboratory, and to cooperate with the several states in a variety of projects for the public good.

As the man responsible for the initial start of this enterprise, there is good reason why Doctor Hough should be called "The Father of American Forestry," even if he did not have the advantage of professional training in forestry to equip him more completely for the duties to which he was called. At a time when forestry was little understood, when continued opposition had to be met and inertia overcome, Doctor Hough should be credited with the tactful handling of forestry matters with those in authority in Congress and elsewhere in the Government. It was no small accomplishment on Doctor Hough's part that he did just this. It made friends for forestry and so paved the way for his successors.

In 1882 and 1883 Doctor Hough conducted for one year the American Journal of Forestry, the first forestry magazine to be issued in the United States. It was discontinued because of lack of support, but it is worth remembering. In 1882 he published his Elements of Forestry, a textbook. This stands as one of the first modern books on forestry in the English language for at that time even in the British Isles books on this subject were few.

As Doctor Hough's interest in forestry was founded on his love of plants and his study of botany, it is not strange that his children inherited that interest. This they did, and so were often able to aid him in his busy life as a compiler and writer. One son in particular, the late Romeyn Beck Hough (1857–1924), carried on, in a sense, one phase of his father's work by his unique contributions in the field of dendrology. His American Woods is in a class by itself for those volumes consist of thin slices of actual wood, cut thin with a microtome to show the transverse, radial and tangential sections of the wood of a given tree. The several volumes of the series illustrate some 250 species, each accompanied by a brief, lucid description in nontechnical phraseology.

Romeyn B. Hough's other important book, The Handbook of the Trees of the Northern United States and Canada, is a valuable help for all students of trees, containing excellent photographic illustrations of leaves, fruit and bark with distribution maps showing the geographic range of each tree and photomicrographs of some of the wood sections.

He was a lover of nature in the truest sense. To pass on what he had learned about trees and woods, because of his scientific background and his technical skill in working with woods, was his consuming concern. By his work and by his personality he added luster to the family name.

Dr Franklin B. Hough passed away at his home in Lowville, N. Y., on June 11, 1885, leaving in his varied contributions to human knowledge a memorial that is enduring. As has been said of him by one of his successors in the office of chief forester of the U. S. Department of Agriculture, " Doctor Hough was perhaps the chief pioneer in forestry in the United States."

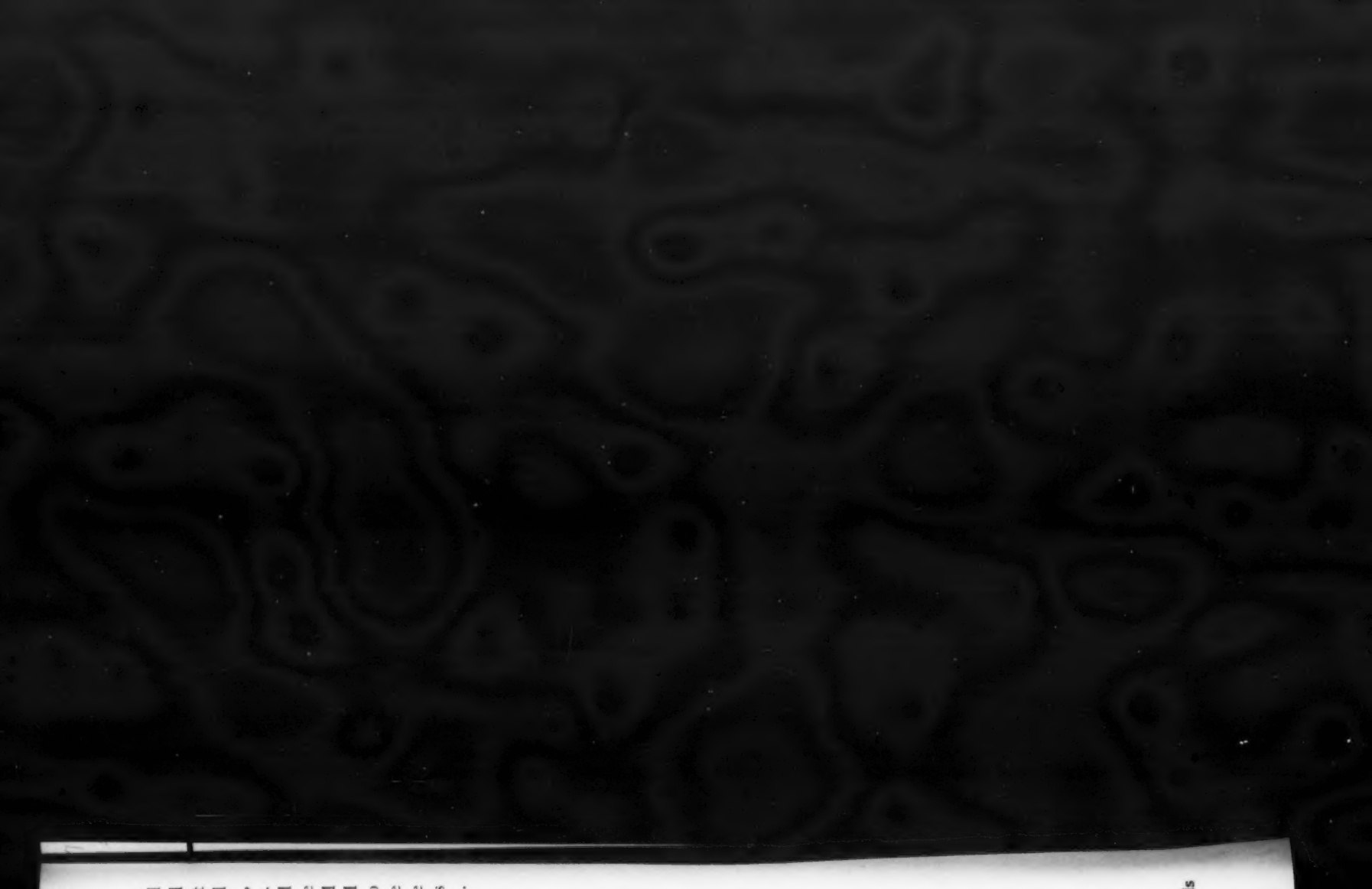
THE NATIONAL WILDLIFE FEDERATION

VICTOR A. MACOMBER, NEW YORK STATE DIRECTOR, NATIONAL WILDLIFE WEEK

The phenomenal growth of the United States could not but result in diminishing the wild life resources in birds, quadrupeds, fish, forests and wildflowers. Unfortunately, with the growth there was a prodigality in our use of these valuable natural resources. We have drained our marshes, destroying the natural habitat of valuable fur bearers, the breeding ground for food fishes and game birds, only to find that the land was useless for agriculture. We have destroyed forests without replanting, polluted waters without cleansing. In short, we have treated our natural resources as though they could never be diminished.

The National Wildlife Federation, appreciating the urgency of the need for public conservation, instituted in 1938 Wildlife Week. Through the sale of

poster stamps bearing colored pictures of birds, fish and animals, flowers, trees and shrubs which are peculiarly American, and an album which describes wild life conservation and the various subjects depicted in the stamps, wild life fact-finding, education, interest and organization have been promoted.

The federation has opposed destructive legislation and has supported progressive laws. Seeking no profit and being non-political, the federation appeals to people in all walks of life, both young and old, an appeal to their patriotism, sense of esthetic values and sportsmanship.

Through the activities of this national group, the gospel of conservation and restoration of wild life, which must logically carry with it the protection and development of soil, forests and waters, is being preached to millions of people. Wildlife Week, March 17th–23d, should be but the beginning for progressive activity throughout the year. Fish, wild animals and wildflowers can not plead their cause. Let us take their part to the end that our children today and those to follow may be blessed with the abundance which Mother Nature has given and can give again with our help.